NON-PUBLIC?: N
ACCESSION #: 9201210228
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Point Beach Nuclear Plant, Unit 2 PAGE: 1 OF 05

DOCKET NUMBER: 05000301

TITLE: Reactor Trip During Modification Work on D11
EVENT DATE: 12/17/91 LER #: 91-006-00 REPORT DATE: 01/15/92

OTHER FACILITIES INVOLVED: Point Beach, Unit 1 DOCKET NO: 05000266

OPERATING MODE: N POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: J. G. Schweitzer, Manager - TELEPHONE: (414) 755-2321
Maintenance

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

At 1008 on December 17, 1991, Point Beach Nuclear Plant Unit 2 experienced a reactor trip during modification work on DC distribution panel D11. While a cable was being pulled from panel D11 as part of the modification, a cable connected to breaker 32 was displaced by the cable being removed. This movement caused the termination in breaker 32 to loosen and allow its associated cable to become disconnected. This cable supplies power to DC distribution panel D22. Panel D22 supplies power to the Unit 2 "A" train reactor protection circuitry. Panel D22 became deenergized, resulting in a reactor trip on Unit 2 and actuation of the crossover steam dumps on Units 1 and 2. The Unit 1 turbine was manually run back to 73% power to allow closure of the Unit 1 crossover steam dump without exceeding reactor power limitations. The Unit 2 condenser steam dumps were not enabled because of the loss of DC power to the arming circuit. Panel D22 was reenergized at 1037. Unit 1 was returned to full power at 1350. After the electrical connections in panels D11 and D13

were check-tightened, Unit 2 was placed back on line at 0346 on December 18. Unit 2 reached full power at 2245 on December 18, 1991. This event is an actuation of the Reactor Protection System (RPS). Therefore, a four-hour notification to the NRC was made in accordance with 10 CFR 50.72(b)(2)(ii).

END OF ABSTRACT

EVENT DESCRIPTION

At 1008 on December 17, 1991, Point Beach Nuclear Plant Unit 2 experienced a reactor trip during modification work on DC distribution panel D11 in accordance with Installation Work Plan (IWP) 90-221-3. As a cable was being pulled from panel D11 as part of the modification, a cable connected to breaker 32 was displaced by the cable being removed. This movement caused the termination on breaker 32 to loosen and allow its associated cable to become disconnected. This cable supplies power to DC distribution panel D22. Panel D22 supplies power to the Unit 2 "A" train reactor protection circuitry and "A" train safeguards DC control power. Panel D22 became deenergized. A reactor trip occurred on Unit 2 due to a loss of DC control power to the "A" reactor trip breaker's undervoltage relay. The "A" reactor trip breaker opened, resulting in a Unit 2 reactor trip.

The loss of DC power in panel D22 also caused the turbine Independent Overspeed Protection System (IOPS) to actuate the crossover steam dump system on Units 1 and 2. For Unit 2, the consequence of opening the crossover steam dump valves was minimal since the reactor and turbine tripped due to the loss of power to the "A" reactor trip breaker's undervoltage relay. The consequence was greater for Unit 1, since the crossover steam dump actuation directly caused an immediate reduction of electrical output. The Unit 1 operator subsequently manually reduced load to 380 MWe (73% power) to allow stabilization of Unit 1 prior to closure of the crossover steam dump valves. The Unit 2 condenser steam dump did not actuate on the trip due to the loss of control power to the arming relay supplied by panel D22. Balance of plant relief valves on feedwater heaters 5A and 5B (tubeside) and main feedwater pumps P28A and P28B (suction) opened due to the pressure increase resulting from the plant transient. Three of these relief valves were subsequently replaced due to leakage.

The cable to breaker 32 was reconnected and at 1037 panel D22 was reenergized. Unit 1 was returned to full power at 1350. After wire termination tightness checks were conducted in panels D11 and D13 (prior

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is event, work had also been performed in panel D13), Unit 2 was placed back on line at 0346 on December 18. Unit 2 reached full power at 2245 on December 18, 1991.

REPORTABILITY

This event is being reported under the requirements of 10 CFR 50.73 (a)(2)(iv), "The licensee shall report...any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)." A four-hour notification to the NRC was made in accordance with 10 CFR 50.72 (b)(2)(ii). The NRC Resident Inspector was also notified.

EQUIPMENT DESCRIPTION

The Reactor Protection System provides protective action for the reactor by interrupting power to the rod drive power cabinet and DC hold bus through the tripping of either the "A" train reactor trip breaker (RTA, served by train "A" instrumentation and logic) or the "B" train reactor trip breaker (RTB, served by train "B" instrumentation and logic). The opening of either breaker interrupts power from the rod drive motor generator (MG) sets to the rod cluster control assembly (RCCA) stationary and movable gripper coils, causing the control rods to drop.

DC distribution panel D22 supplies control power to the following Unit 2 "A" train equipment:

Main Steam Isolation Valve Solenoids
Reactor Trip Breaker Switchgear
Reactor Protection Rack 2C155
Engineered Safeguards Features (ESF) Racks 2C156 and 2C157
Sample System Valves 2V-951, 953, 955, and 959
Generator 2G06 and Output Breaker Control 2C41
Turbine Independent Overspeed Protection System (IOPS), Units 1 and 2

Deenergizing this panel at power will trip reactor trip breaker "RTA" on loss of power to its undervoltage relay and cause the crossover steam dumps to actuate on Units 1 and 2.

A detailed analysis of a loss of power to panel D22 (ABB Impell Report 09-0870-S-009 Rev. 0, "Loss of DC Power Evaluation," dated December 17, 1991) was previously performed in response to INPO SOER 83-05, "DC Power

System Failures." The transient was consistent with the analysis.

CAUSE

This event occurred due to a loose cable termination caused by cable movement during modification work. As a cable was being pulled from DC distribution panel D11 as part of a modification, it bumped the DC distribution panel D22 power supply cable connected to breaker 32. The force displaced the cable, causing its termination in breaker 32 to loosen. The cable subsequently slipped out of its termination, deenergizing panel D22.

CORRECTIVE ACTIONS

Immediate:

1. Stopped work on panel D11.

Short Term:

1. Completed ECL-5, "Post-Trip Reviews."

2. Check-tightened all terminations in panels D11 and D13. One termination required additional torquing.

3. Conducted a stroke test of the Unit 2 "B" atmospheric steam dump valve. Maintenance was performed on the valve as a result of this test.

4. Satisfactorily stroke-tested the Unit 2 main steam isolation valves.

5. Replaced one balance of plant relief valve on the Number 5 Feedwater Heater and each relief valve on the suction of Main Feedwater Pumps P28A and P28B due to leakage.

6. Restored the Unit 1 crossover steam dump system to normal operation.

7. Isolated the IOPS outputs to prevent actuation when reenergizing panel D22.

8. Modified IWP 90-221-3 to check-tighten all terminations in panels D11 and D13 after subsequent work was performed in those panels.

9. Reconnected the cable to breaker 32 to restore power to panel D22.

Long Term:

1. We are in the process of evaluating molded case circuit breaker preventive maintenance programs. This evaluation will assess the need for termination checks. We intend to complete this evaluation by December 15, 1992.

SAFETY ASSESSMENT

All systems functioned as designed during this event. The safety of the plant and the health and safety of the public and plant employees were not jeopardized by this event.

GENERIC IMPLICATIONS

The loosening of stranded cable in similar molded case circuit breaker terminations could be a generic concern throughout the industry. Therefore, the below information is provided:

Manufacturer: Westinghouse
Model No.: HFA
Serial No.: 504C748G10

SIMILAR OCCURRENCES

There have been no past events reported which were caused by loose cable connections. However, the following LER's report similar events of RPS activation due to personnel bumping or jarring equipment:

LER Date Title

266/91-006-00 07/15/91 INADVERTENT START OF EMERGENCY DIESEL GENERATOR

301/90-005-00 01/11/91 INADVERTENT RELAY ACTION CAUSES LOSS OF CONDENSATE FLOW

301/90-004-00 11/29/90 ACTUATION OF THE CONTAINMENT FAN COOLERS SERVICE WATER VALVE

301/84-006-00 11/14/84 INADVERTENT ACTUATION OF EMERGENCY SAFEGUARDS

266/83-003-00 04/08/83 INADVERTENT "CRITICAL CONTROL POWER FAILURE" ALARM

ATTACHMENT 1 TO 9201210228 PAGE 1 OF 1

Wisconsin
Electric
POWER COMPANY

231 W. Michigan, P.O. Box 2046, Milwaukee, WI 53201 (414) 221-2345

VPNPD-92-028 10 CFR 50.73
NRC-92-004

January 15, 1992

U. S. NUCLEAR REGULATORY COMMISSION
Document Control Desk
Mail Station P1-137
Washington, DC 20555

Gentlemen:

DOCKET 50-301
LICENSEE EVENT REPORT 91-006-00
REACTOR TRIP DURING MODIFICATION WORK ON D11
POINT BEACH NUCLEAR PLANT, UNIT 2

Enclosed is Licensee Event Report 91-006-00 for Point Beach Nuclear Plant, Unit 2. This report is provided in accordance with 10 CFR 50.73 (a)(2)(iv), "The licensee shall report...any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)."

This report describes a Unit 2 reactor trip initiated when a power supply lead to DC distribution panel D22 became disconnected during modification work. Power was subsequently lost to the Unit 2 "A" train reactor protection rack and associated trip breaker, causing the reactor trip.

If any further information is required, please contact us.

Sincerely,

James J. Zach
Vice President
Nuclear Power

Enclosures

Copies to NRC Regional Administrator, Region III
NRC Resident Inspector

A subsidiary of Wisconsin Energy Corporation

*** END OF DOCUMENT ***